WHAT IS CLAIMED IS:

1   1.   A system for controlling a volume output by a set of headphones to prevent

2   harmful sound levels from damaging a user's hearing, the system comprising:

3   a volume sensor/controller for determining sound levels from an audio source and

4   comparing the predetermined sound levels to a volume threshold; and

5   a warning indicator for indicating that the determined sound level is outside the volume

6   threshold.

1   2.   A system for controlling volume output as described in Claim 1, wherein the

2   determined sound levels are represented as energy functions according to their respective

3   frequencies.

1   3.   A system as described in Claim 1, wherein the volume sensor/controller

2   comprises:

3   a volume calibrator for setting the volume threshold;

4   a volume/frequency measurement sensor for representing the determined sound levels as

5   energy functions; and

6   a comparator for comparing the determined sound levels with the volume threshold and

7   notifying the warning indicator that the volume threshold has been exceeded.

1   4.   A system as described in Claim 1, wherein the warning indicator is fixed to the

2   headphones for indicating when the volume threshold has been exceeded.

1   5.   A system as described in Claim 4, wherein the warning indicator comprises a

2   plurality of LED's.

1   6.   A system as described in Claim 4, wherein the warning indicator comprises an

2   LCD.

1   7.   A system as described in Claim 4, wherein the warning indicator comprises an

2   audio indicator.

1   8.   A volume sensor/controller as described in Claim 3, wherein the volume

2   calibrator comprises:

3   a category selector allowing the user to select between different volume controlling

4   settings matching different user characteristics; and

5   a category data base for storing the sound characteristics for the volume controlling

6   settings.

1   9.   A volume calibrator as described in Claim 8, wherein the category data base

2   comprises:

3   a default user setting;

4   an age dependent setting;

5   a listener type setting; and

6   a manually controlled setting.

1   10.   A category data base as described in Claim 9, wherein the listener type setting is

2   configured for setting the volume for a user having a form of hearing loss.

1   11.   A system for controlling a volume output by a set of headphones to prevent

2   harmful sound levels from damaging a user's hearing, the system comprising a volume

3   sensor/controller for:

4   determining sound levels from an audio source;

5   comparing the determined sound levels to a volume threshold; and

1   adjusting the volume output of the headphones to a level below the volume threshold if

2   said determined sound level is above the volume threshold.

1   12.   A system for controlling volume output as described in Claim 11, wherein the

2   determined sound levels are represented as energy functions according to their respective

3   frequencies.

1   13.   A system as described in Claim 11, wherein the volume sensor/controller

2   comprises:

3   a volume calibrator for setting the volume threshold and a volume control mode;

4   a volume/frequency measurement sensor for representing the determined sound levels as

5   energy functions;

6   a comparator for comparing the determined sound levels with the volume threshold; and

7   an active volume controller for controlling the output volume by adjusting the output

8   volume accordingly in an automatic volume control mode.

1   14.   A volume sensor/controller as described in Claim 13, wherein the volume

2   calibrator comprises:

3   a volume control mode selector allowing the user to select between an automatic or

4   manual volume control mode;

5   a category selector allowing the user to select between different volume controlling

6   settings matching different user characteristics; and

8   a category data base for storing the sound characteristics for the volume controlling

9   settings.

1   15.   A volume calibrator as described in Claim 14, wherein the category data base

2   comprises:

3   a default user setting;

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1   an age dependent setting;

2   a listener type setting; and

3   a manually controlled setting.

1   16. A category data base as described in Claim 15, wherein the listener type setting is

2 configured for setting the volume for a user having a form of hearing loss.

1   17. A volume sensor/controller as described in Claim 13, wherein the active volume

2 controller comprises:

3   a volume adjuster for adjusting the volume according to the compared energy value; and

4   a notifier for notifying the warning system that an adjustment was necessary.

1   18. A system for controlling a volume output to prevent harmful sound levels from

2 damaging a user's hearing, the system comprising:

3   a set of headphones;

4   a volume sensor/controller for determining a sound level corresponding to an audio

5 source and comparing the sound level to a volume threshold; and

6   a warning indicator remote from the headphones, in communication with the volume

7 sensor/controller, for indicating that the determined sound level is above the volume threshold.

1   19. A warning system as described in Claim 18, wherein the warning indicator is

2 provided by a PC.

1   20. A warning system as described in Claim 19, wherein the PC includes a database

2 for storing a user's listening history.

1   21. A warning system as described in Claim 18, wherein the warning indicator is

2 provided on a remote hand held device.

1   22.   A system as described in Claim 18, further comprising wireless connection

2   hardware for wirelessly connecting the headphones and the audio source.

1   23.   A method for controlling a volume output of a set of headphones to prevent

2   harmful sound levels from damaging a user hearing, the method comprising:

3   setting a volume threshold;

4   receiving audio signals from an audio source;

5   comparing the audio signals to the volume threshold; and

6   adjusting a volume output of the compared audio signal to be within the volume

7   threshold.

1   24.   A method as described in Claim 23, further comprising sending a warning signal

2   to a warning indicator when the audio signals are determined to be above the volume threshold.

1   25.   A method of sending a warning signal as described in Claim 24, wherein the

2   warning signal is sent via a network.

1   26.   A method as described in Claim 24, further comprising storing each occurrence of

2   sending the warning signal in a database.